



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/791,295 | 03/03/2004 | Yoshinobu Suehiro | PTGF-03109 | 3532 |

21254 7590 07/12/2007
MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

| |
|----------|
| EXAMINER |
|----------|

ARENA, ANDREW OWENS

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2811

| | |
|-----------|---------------|
| MAIL DATE | DELIVERY MODE |
|-----------|---------------|

07/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/791,295

Applicant(s)

SUEHIRO ET AL.

Examiner

Andrew O. Arena

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2007.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 26-42 is/are pending in the application.
- 4a) Of the above claim(s) 7-11, 36 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 26-35, 37-39, 41 and 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-6, 26-35, 37-39 and 41-42, drawn to a light emitting device, classified in class 257, subclass 79+.
- II. Claims 7-11, 36 and 40, drawn to a method for making a light emitting device, classified in class 438, subclass 22+.

A requirement for restriction is proper when two criteria are met: (A) the inventions are independent or distinct as claimed; and (B) there be a serious burden on the examiner if restriction is not required. See MPEP § 803(I).

Inventions I and II are related as product made and process of making. The inventions are distinct because the product as claimed does not require the recited "pre-molded" process step since the patentability of a product does not depend on its method of production. See MPEP § 2113, also § 2114. The claimed product can be made by another and materially different process from that claimed, such as a light-transmitting portion which is not pre-molded but applied. See MPEP § 806.05(f).

There would be a serious burden at least because the inventions as claimed are separately classified, and also because a search for the claimed product does not require the "pre-molded" query required to search for the claimed process. See MPEP § 808.02.

Originally presented process claims were not distinct from originally presented product claims, however the amendment filed 04/17/2007 introduces a specific method step ("pre-molded") resulting in both distinctness and serious burden.

Applicant has received an action on the merits for the originally presented invention, which has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 7-11, 36 and 40 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Also note that restriction was already required between product and process on 10/26/2005 and election of the process claims was made **without traverse** in the reply filed 11/23/2005.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action (dated 01/31/2006).

Claims 1, 2, 4, 33, 35, 38, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Juestel (JP Pub 2002-223008).

A machine translation from the JPO website of the Juestel reference was provided in a prior office action (dated 01/31/2006) and is referred to herein.

Re claim 1, Juestel discloses (Drawing 1) a light emitting apparatus (1), comprising:

a semiconductor light emitting element (3) that emits light with a predetermined wavelength (¶27 ln 5);

a light-transmitting portion (6; ¶24 In 1-3) that includes a recess (at 2) to house the semiconductor light emitting element (3), the light-transmitting portion comprising a light-transmitting material (¶24 In 1-3); and

a phosphor layer portion (4; ¶24 In 5) that is formed on a surface of the recess, the phosphor portion including a phosphor to be excited by irradiating light emitted from the semiconductor light emitting element (inherent in fluorescent substance, ¶24 In 5).

The limitation "pre-molded" does not impart patentability since the product in the product-by-process claim is the same as that of the prior art. See MPEP § 2113.

Re claim 2, Juestel discloses (Drawing 1) the light-transmitting portion has a light convergence shape to converge light (inherent in the convex lens shape 6) emitted from the light emitting element (¶24 In 1-3).

Re claim 4, Juestel discloses (Drawing 1) the recess is located close to the semiconductor light emitting element along the profile of the semiconductor light emitting element (apparent in Drawing 1).

Re claim 33, Juestel discloses said light emitting element emits light having a wavelength of 450nm (¶13).

Re claim 35, Juestel discloses (Drawing 1) said phosphor layer portion (2) comprises uniform thickness.

Re claim 38, Juestel discloses (Drawing 1) said phosphor layer portion (2) comprises an inner surface having a shape which is dependent upon a shape of said recess (in that both have the same shape).

Re claim 39, Juestel discloses said light-transmitting portion comprises a positioning portion (broadly interpreted as per MPEP § 2111 to encompass Juestel Drawing 1, e.g., flat bottom).

The recitation "to allow...element" is statement of indented use and does not structurally distinguish the claimed apparatus from the prior art. See MPEP § 2114.

Re claim 41, Juestel discloses said recess comprises a predetermined size (broadly interpreted as per MPEP § 2111 to encompass Juestel Drawing 1) which is other than defined by a thickness of said phosphor layer portion.

Claims 37 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Lowery (5,959,316).

Re claim 37, Lowery discloses (Fig 1 + Fig 4) a light emitting apparatus, comprising:

a light emitting element (18; col 2 ln 8) that emits light with a predetermined wavelength;

a lens (26) comprising a recessed portion (in which 18 lies) which has a predetermined size, said light emitting element being housed in said recessed portion such that said lens is formed over said light emitting element; and

a phosphor layer (Fig 4: 66; col 2 ln 44) formed on a surface of said recessed portion, said phosphor layer including a material (col 2 ln 19) which is excited by light emitted from the light emitting element,

wherein a sealant (64; col 2 ln 43) is formed between said light emitting element and said phosphor layer, for sealing said light emitting element.

The limitation "pre-molded" does not impart patentability since the product in the product-by-process claim is the same as that of the prior art. See MPEP § 2113.

Re claim 42, Lowery discloses said recess comprises a predetermined size (broadly interpreted as per MPEP § 2111 to encompass Lowery Fig 1 + Fig 4) which is other than defined by a thickness of said phosphor layer portion.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action (dated 01/31/2006).

Claims 3, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juestel as applied to claim 1 above, and further in view of Roberts (US 6,335,548).

Re claim 3, Juestel discloses the semiconductor light emitting element is an LED element (abstract ln 1-2) that emits light from its light emission surface located on the opposite side of its mounting surface (light is emitted from said surface).

Juestel differs from the claimed invention only in not expressly disclosing a flip-chip type LED.

Roberts teaches the use of a flip-chip type LED (col 20 ln 15-37).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that the LED of Juestel is a flip-chip type LED, as taught by Roberts; at least to extend operation (Roberts: col 20 ln 33-37).

Re claim 5, Juestel differs from the claimed invention only in not disclosing a plurality of LED elements.

Roberts teaches (Fig 19) a plurality of LED elements (col 29 ln 64-65).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Juestel in view of Roberts such that the semiconductor light emitting element is composed of a plurality of LED elements disposed in a predetermined arrangement; at least to produce light of any color desired (Roberts: col 30 ln 12-20).

Re claim 6, Juestel differs from the claimed invention only in not disclosing a plurality of LED elements.

Roberts teaches (Fig 19) a plurality of LED elements (col 29 ln 64-65) with different emission wavelengths (col 30 ln 12-14).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Juestel in view of Roberts such that the semiconductor light emitting element is composed of a plurality of LED elements with different emission wavelengths disposed in a predetermined arrangement; at least to produce light of any color desired (col 30 ln 12-20).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juestel as applied to claim 1 above, and further in view of Lowery.

Re claim 26, Juestel differs from the claimed invention only in not disclosing a sealant formed between the light emitting element and the phosphor layer.

Lowery discloses (Fig 4) a sealant (64; col 3 ln 27) formed between said light emitting element and said phosphor layer (66; col 3 ln 29). Lowery discloses said sealant comprises a viscous, transparent, UV cured resin (col 3 ln 21-24).

Lowery does not expressly disclose the material of the transparent resin.

Examiner takes official notice that silicon resin is a well-known UV cureable resin.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Juestel in view of Lowery such that a sealant is formed between said light emitting element and said phosphor layer portion, for sealing said light-emitting element, wherein said sealant comprises a transparent silicon resin; at least to prevent the annular ring problem (Lowery: col 3 ln 33).

Claims 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juestel as applied to claim 1 above, and further in view of Chen (US 6,531,328).

Re claim 27, Juestel differs from the claimed invention only in not expressly disclosing how contact to the light emitting apparatus is made.

Chen discloses (Fig 14) a plurality of leads (17, 18) and a submount (8) formed on said plurality of leads, said light emitting element (3) being formed on said submount.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that Juestel use a connection structure similar to Chen, comprising a plurality of leads and a submount formed on said plurality of leads, said light emitting element being formed on said submount; at least to allow electrical connection to the apparatus of Juestel.

Re claim 28, Juestel as modified above discloses said submount comprises a thermally conductive submount (Chen: col 5 ln 66).

Re claim 29, Juestel as modified above discloses said light transmitting portion is formed (indirectly) on said plurality of leads, said recess being aligned with said light emitting element.

Re claim 30, Juestel as modified above discloses (Chen: Fig 14) a wiring pattern (17a) formed on said submount, said light emitting element (3) being mounted on said wiring pattern.

Re claim 31, Juestel as modified above discloses (Chen: 14) said light emitting element is flip-chip bonded through bumps (21) onto the wiring pattern.

Re claim 32, Juestel as modified above discloses (Chen: Fig 8) said submount (8) comprises a viahole (14) said wiring pattern (17a) being electrically connected though said viahole (col 5 ln 37-38) to said lead (17).

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juestel as applied to claim 1 above, and further in view of Keller (US 2004/0012027).

Re claim 34, Juestel differs from the claimed invention in not disclosing said phosphor comprises Ce:YAG.

Keller teaches that Ce:YAG is a typical phosphor.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made that, in view of Keller, said phosphor layer portion comprises Ce:YAG; at least to use a typical phosphor.

Response to Arguments

Applicant's arguments filed 04/17/2007 have been fully considered but they are not persuasive.

The arguments are premised primarily on distinctions between the methods by which the prior art and applicant's claimed structures are made, supplemented by allegations that examiner's combinations are non-obvious. Neither is persuasive.

The product in the product-by-process claim is the same as or obvious from a product of the prior art, these claims are unpatentable even though the prior product was made by a different process. See MPEP § 2113, also § 2114.

The arguments that the references are "unrelated" are made by selecting and comparing certain limiting portions of the disclosures as if said portions defined the field of endeavor of their respective references. Examiner submits that the field of endeavor of applicant's invention and every single cited reference is packaging of LEDs.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is 571-272-5976. The examiner can normally be reached on M-F 8:30-5.

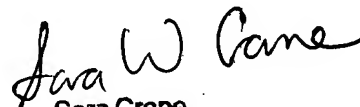
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571- 272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2811

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Andrew O. Arena
9 July 2007



Sara Crane
Primary Examiner